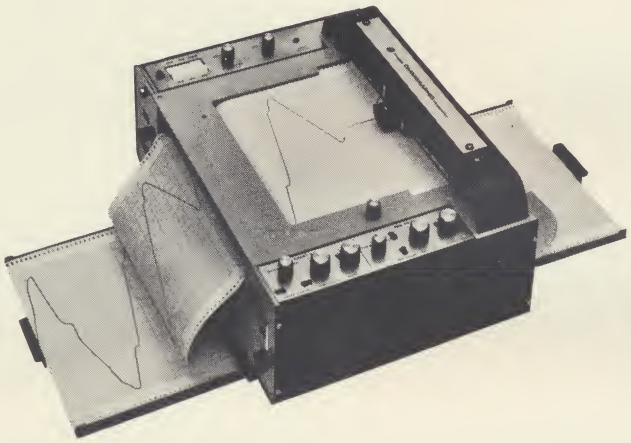
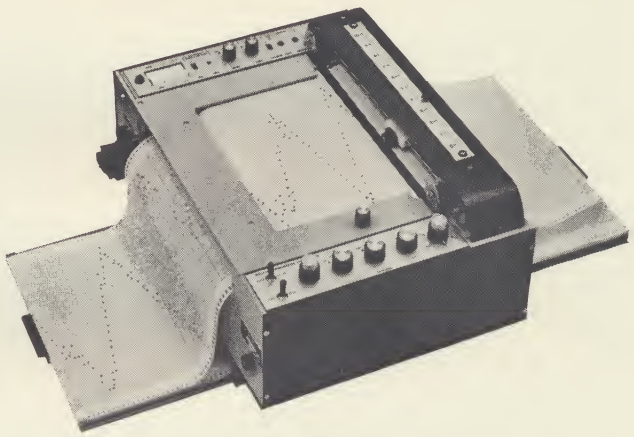
Q. How many dollars does it take to produce this  ?

A. Incrementally: $2850
Digitally: $3725
Only by Omnigraphic™





The new incremental Omnigraphic™ Plotter

is a bi-directional recorder that operates directly from digital computers, incremental encoders, pulsers, pulse generators or any incremental signal.

- Z-Fold Paper (tears out to standard 8½" x 11")
- 18,000 Increments/min Speed
- 0.01" or 0.005" Resolution
- Infinite Scale Expansion
- $2850

The new direct digital incremental Omnigraphic™ Plotter

is a high speed point plotter which operates directly from binary or BCD data.

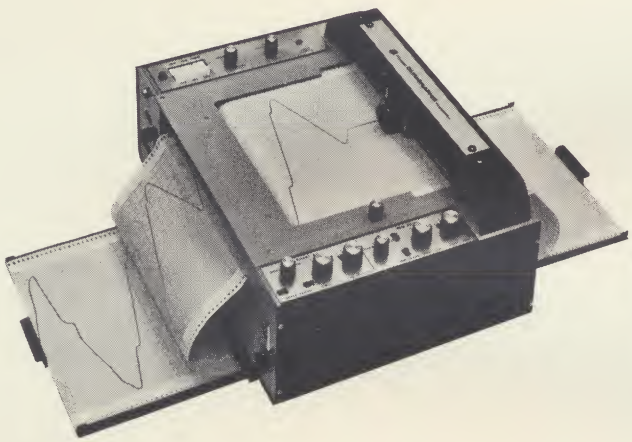
- Z-Fold Paper (tears out to standard 8½" x 11")
- 2400 inch/min Slewing Speed
- Capable of Both Digital or Analog Operations
- 2 μsec. Access—Single Point Memory
- $3725

houston **OMNIGRAPHIC** corporation

a subsidiary of houston instrument corporation
4950 Terminal Ave. / Bellaire, Texas 77401
(713) 667 7403 / cable HOINCO / TWX (713) 571 2063

Which approach to Digital Plotting fulfills your needs?

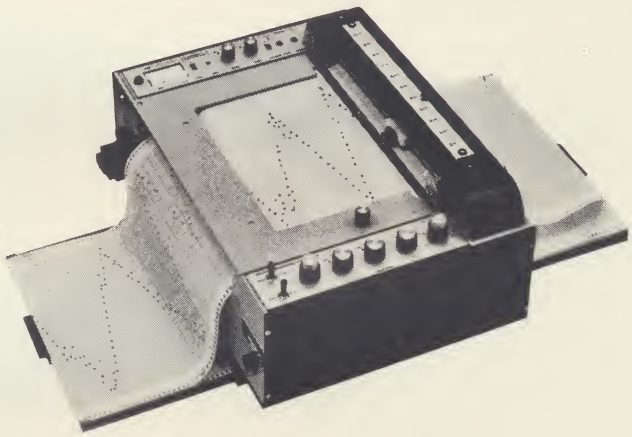
If you prefer an incremental plotter:



Model 6650 Omnigraphic™ Incremental Plotter is a bi-directional recorder that operates directly from digital computers, incremental encoders, pulsers, pulse generators or any incremental signal.

- Z-Fold Paper (tears out to standard 8½″ x 11″)
- 18,000 Increments/min Speed
- 0.01″ or 0.005″ Resolution
- Infinite Scale Expansion
- $2850

If you prefer plotting directly from parallel digital data:



Model 6710 Omnigraphic™ Digital Plotter is a high speed point plotter which operates directly from binary or BCD data.

- Z-fold Paper (tears out to standard 8½″ x 11″)
- 2400 inch/min Slewing Speed
- Capable of Both Digital or Analog Operations
- 2 μsec. Access—Single Point Memory
- $3725

houston OMNIGRAPHIC corporation
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digital plotting system
model 6710

a high speed graphical point plotter operating directly from parallel binary or BCD digital data

40 inches per sec. slewing speed / requires only a 1.5 usec. data gate time / no digital to pulse train interface required / single point memory / Z-fold chart paper / flexible remote control structure / capable of both digital and discrete analog operation

description

The 6710 OMNIGRAPHIC$_{TM}$ Plotting System is a high speed graphical digital point plotter. It plots chronological, consecutive, sequential data presented in parallel binary or BCD codes at an average rate of 1000 points per minute with 0.2% accuracy. As each data point is plotted, the chart advances a fixed increment for the next data point. Advance has a selectable spacing of 0.025, 0.050, 0.075 or 0.10 inches. Since incremental advance is used, the data source is relieved of X positioning information or analog staircase voltages as normally required by X-Y recorders.

typical data sources

Are	And Also Include
Digital Computers	*Any data source with sequential information in parallel digit format or discrete analog voltage levels.*
Incremental Mag Tapes	
Digital Voltmeters	
Counters	

For computer applications, there are several distinct advantages over incremental plotters. These include speed, absence of digital to pulse train conversion, direct digital input, very low data source servicing time, —all with equivalent accuracy.

For applications with digital voltmeters, counters and on-line digital output devices, the 6710 System offers an accurate graphical presentation of data at speeds equivalent to high speed printers. Reduction and analysis of data is direct, in graphical form, rather than columns of figures.

The 6710 has a self-contained memory which requires only 1.5 μsec. of data source access. Once the data is in the plotter memory, the data source can proceed to accumulate, compute or present the next data. In the interim, the plotter proceeds at its maximum rate to plot the data in its memory. This technique maximizes the functional use of both data source and plotting system.

Interface commands by and between the plotting system and data source are controlled from the instrument front panel. This not only allows the 6710 System to be used with a multitude of data sources, but also allows a choice of synchronous or asynchronous operation.

The Y (plot) axis has 10 inches of plotting surface with a resolution of 1 part in 1000 for 3 digit BCD or 10 bit binary presentation. The X (paper) axis has an unlimited length of recording surface with fan-fold paper presentation. Further advantages of this type of presentation are detailed below.

chart drive

The chart drive is unique in that the paper is maintained in place automatically, and held under a slight tension, when the cover is closed. This is accomplished by a spring torsion action between the left and right drive sprockets rather than by energy consuming slip clutches. The chart may thus be driven from left to right or right to left by the stepper motor drive, as the paper unfolds and folds from right to left or vice versa.

plot drive

The pen drive is attached to the recorder lid which is hinged. This allows loading or unloading of chart paper at any point on the graph. The plot drive mechanism is actually incorporated in the body of the recorder to protect it from damage. A cabling system uses the fulcrum of the recorder lid as a pulley point such that the plot mechanism works at all times whether the lid is down for plotting or up for paper loading. Therefore, no adjustments are ever required and the mechanism is fully protected within the recorder body.

charts and chart loading

In designing the new line of OMNIGRAPHIC$_{TM}$ recorders, it was decided to break with tradition and abandon the roll chart or individual flat sheet X-Y concept in favor of folded charts. The OMNIGRAPHIC$_{TM}$ folded charts are further improved in that they offer the best advantages of fan-fold "book" readability, have unlimited length and can be filed in a standard 8½" x 11" file folder.

Folded packets of chart paper are used, which store on a tray in the recorder base and pay into a second tray on the opposite side. The charts are both folded and perforated every 8½". The sprocket hole strips are perforated for removal and when removed, the remaining paper width is 11 inches. By tearing off the sprocket strips and tearing at the perforated fold points a standard size of paper is achieved. Either "A" size (8½" x 11") or "B" size (11" x 17") serially numbered sheets are derived. These are immediately ready for storage, reproduction, or reprint use.

The packets may be installed or removed by simply raising the recorder lid. A partially completed packet may be removed and the used and unused sections simply folded together and stored if it is necessary to temporarily interrupt a series of tests. The section of chart just recorded and all earlier and later sections are accessible for annotation.

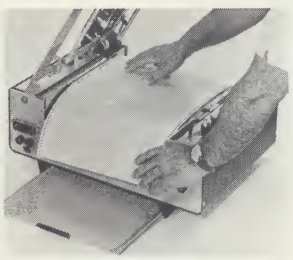
Summary:

The major inconveniences of storing, loading and removing roll charts or individual sheets are eliminated.

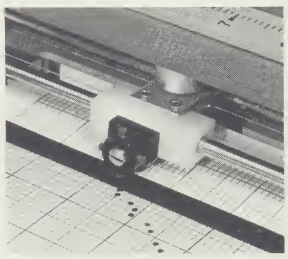
The problem of lack of accessibility of the previously recorded portion of a roll chart record is eliminated.

The time consuming process of individual hand loading of each record is eliminated, yet the advantages of standard record sheet size is preserved.

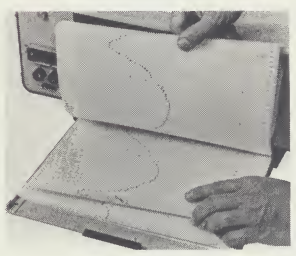
Records of any length may be made and stored in standard size file folders or notebooks. Cementing or taping the packets end-to-end makes a record of unlimited length possible. *Single records or roll charts are limited in length by recorder design.*



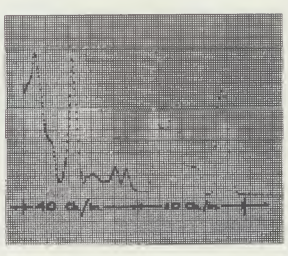
Ease of loading



4 character plotting



Z-Fold paper



Variable resolution

specifications

general

Recording Mechanism — Printer head is driven by a 33,000 radian/sec.^{2} tachometer-damped servo motor with a maximum speed of 40 in./sec. Paper is driven by a bi-directional stepper motor. Each axis is completely independent of the other.

Printing Mechanism — Four characters (+ • x o) are mounted on a manually rotatable head.

Chart Paper — Fan-fold chart paper is stored in a tray on one side of the recorder and pays into a tray on the opposite side. The folded packet (perforated edges removed) is 8½" x 11". Serial locating numbers are printed every 17 inches. Each folded packet has a 10 inch recording surface (pen) extending 144 feet in length with perforations every 8½ inches at the folds. Blank or pre-printed grid paper is available.

Positioning — Chart can be slewed either forward or reverse at fast (5 inches/sec.) or slow (⅛ in./sec.) speeds. Printer head can be offset up to full chart width.

Outputs — Recorder provides +14 VDC @ 100 ma, +27 VDC @ 10 ma and −6 VDC @ 10 ma which can be used for external control circuitry or logic.

Ambient Temperature Range: 0 to 40°C

Humidity: 0 to 95% at 30°C dry bulb

Power Requirement: 115 or 230 VAC, 50/60 Hz, 300 VA maximum

digital plot operation

Input Format: Choice of 3 decade binary coded decimal 8-4-2-1, 2-4-2-1 or 4-2-2-1 or 10 bit unipolar binary code.

Format Logic: Available as

Binary 1	Binary 0
+3 to +50 V	0 to −50 V
−3 to −50 V	0 to +50 V
0 to +50 V	−3 to −50 V
0 to −50 V	+3 to +50 V

Also can be operated from contact closure by adding one resistor externally in the input.

Input Impedance: 10 K Ω fixed.

Input Dwell Time: 1.5 μsec. minimum required after receipt of plot command.

Input Memory: Will retain indefinitely last input until a new plot command is received.

Plotting Rate: 1200 points/ minute maximum

Slewing Speed: 40 in./sec. maximum

Accuracy: 0.2% of full scale

Repeatability: 0.1% of full scale

system interfacing—synchronous operation

OUTPUTS:

Completed Plot Signal — Permits selection of positive or negative going pulses with a minimum amplitude of 3.0 volts. May be used for program interrupt requests. Pulse width is 1.5 μsec. standard. Others available on request.

Waiting Flag — A +12 or 0 ± 0.5 VDC level to indicate whether the system is waiting for data or is in the process of plotting. A complement is available so that the waiting condition can either be signified by the 0 volt or 12 volt level.

INPUTS:

Plot Command — A positive going pulse with a minimum width of 1.5 μsec. and an amplitude of 3.0 to 50 V into a 10 K Ω load. A noise immunity of 0.5 V is also provided to prevent false triggering. Maximum width is 15 μsec.

Disable — An external signal can completely shut off plotting operation regardless of input changes. Front panel selection of:

Positive	Disable:	+3 to 12 VDC
	Enable:	0 to −5 VDC
		or
Negative	Disable:	−3 to −12 VDC
	Enable:	0 to +12 VDC

system interfacing—asynchronous operation

When operating in the asynchronous mode, the unit generates a 1.5 μsec. wide negative or positive going pulse to external equipment indicating that it is starting a plot. It then starts to plot the analog of its digital input within 1 μsec. and at the completion of the plot it sends another pulse indicating the starting of another plot.

chart axis operation

Resolution: 0.025, 0.050, 0.075, 0.100 inches of chart advance per plotted point. Switch selectable from front panel.

Plot Advance Rate: Maximum of 20 advances per second (0.5 to 2.0 inches/sec. depending on resolution setting).

Manual Advance: Single step forward or bi-directional choice of fast (5 in./sec.) or slow (⅛ in./sec.)

Remote Bi-Directional Control: Connector pins are provided for a bi-directional stepper motor

analog plot operation

Input Characteristics: Isolated and free of ground for grounded, single ended or floating DC inputs up to 200 volts DC above ground.

Voltage Ranges: 5 fixed calibrated ranges: .001, .010, .100, 1.0, 10.0 volts/inch. Continuously variable between ranges with vernier control.

Input Resistance: Potentiometric on .001 volt/inch range. 100,000 Ω fixed on all other ranges including variable.

Interference Rejection: DC common mode rejection 140 db. AC common mode rejection 120 db at power line frequency.
AC normal mode rejection 40 db at power line frequency.

Polarity: Selectable for positive or negative going inputs.

Standardization: Dual regulated temp. compensated zener reference.

Plotting Rate: 1200 prints/min. maximum.

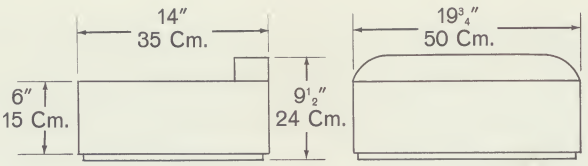
Slewing Speed: 40 in./sec. maximum.

Zero Adjustment: Coarse & fine adjustment −20% to +120% of input sensitivity.

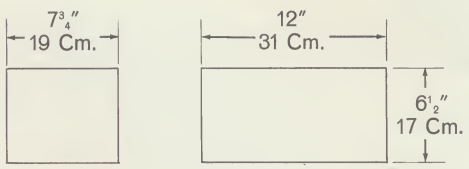
Accuracy: 0.2% of full scale.

Repeatability: 0.1% of full scale.

physical dimensions



PLOTTER



INTERFACE

ordering information

basic model description
6710 — A G - 0 0 1
6810 — A G

catalog description	code
A	BCD 8-4-2-1
B	BCD 2-4-2-1
C	BCD 4-2-2-1
D	Binary

catalog description	binary 1	binary 0
G	+3 to +50V	0 to −50V
H	−3 to −50V	0 to +50V
K	0 to +50V	−3 to −50V
L	0 to −50V	+3 to +50V

Optional accessory if desired. See listing below — add respective additional charge.

6710 — A G - 0 0 1	Digital OMNIGRAPHIC$_{TM}$ Plotting System consisting of Model 6550 Plotter and Model 6810 Digital Interface with connecting cable and mating input connectors. Capable of 1000 plots/minute from binary or 3 digit BCD data with fan fold paper presentation.	$3,725.00
6810 — A G	Digital Interface only to mate with existing 6550 OMNIGRAPHIC$_{TM}$ Plotter. Complete with connecting cable and mating input connector.	875.00

For 230 VAC, 50/60 Hz operation prefix model Number with "E"

Plotter furnished with dust cover, one PR-10 Printer Ribbon and one box FC-40 Chart Paper.

optional features

suffix to model #	description	additional
-001	Retransmitting potentiometer on paper axis	$ 50.00
-003	Substitution of continuous ink trace for character printer	115.00
-004	Limit switch pen axis — fully adjustable full scale	35.00
-005	Two limit switches pen axis — both adjustable full scale	100.00
-006	Chart index — switch closure advances paper ½ inch beyond next paper fold or perforated tear point. Insures that each and every record is started on a separate chart	115.00
-007	Retransmitting potentiometer for pen axis	50.00

supplies

catalog #	description	price ea.
FC-00	Chart paper — fan-fold blank recording surface, 10 inch (pen axis) by 144 feet (chart axis), folded every 8½ inches with serial numbers every 17 inches. Perforated sprocket edges tear off to yield standard 8½″ x 11″ or 11″ x 17″ notebook size paper.	$5.00
FC-40	Chart paper — Fan-fold, 10 inch grid divided into 10 major and 100 minor divisions. Paper axis grid divided into 10 minor divisions and 1 major division per inch. 144 feet long having tear apart feature and serial numbering.	$6.00
FC-45	Chart paper — Fan-fold, 10 inch Y (pen) grid divided into 5 decades log. Paper axis grid divided into 10 minor and 1 major division per inch. 144 feet long having tear apart feature and serial numbering.	$6.00
PR-10	Printer Ribbon — black	$3.75

Prices: fob Houston, Texas

Terms: Net 30 Days

The right is reserved to make changes in construction, design, specifications and price without notice.

warranty:

Houston OMNIGRAPHIC Corporation warrants unconditionally for one year from date of shipment each instrument manufactured by it to be free from defects in material and workmanship. Its liability under this warranty is liimted to servicing or adjusting any instrument returned by the original purchaser to the factory for that purpose and to replace any defective parts therein.

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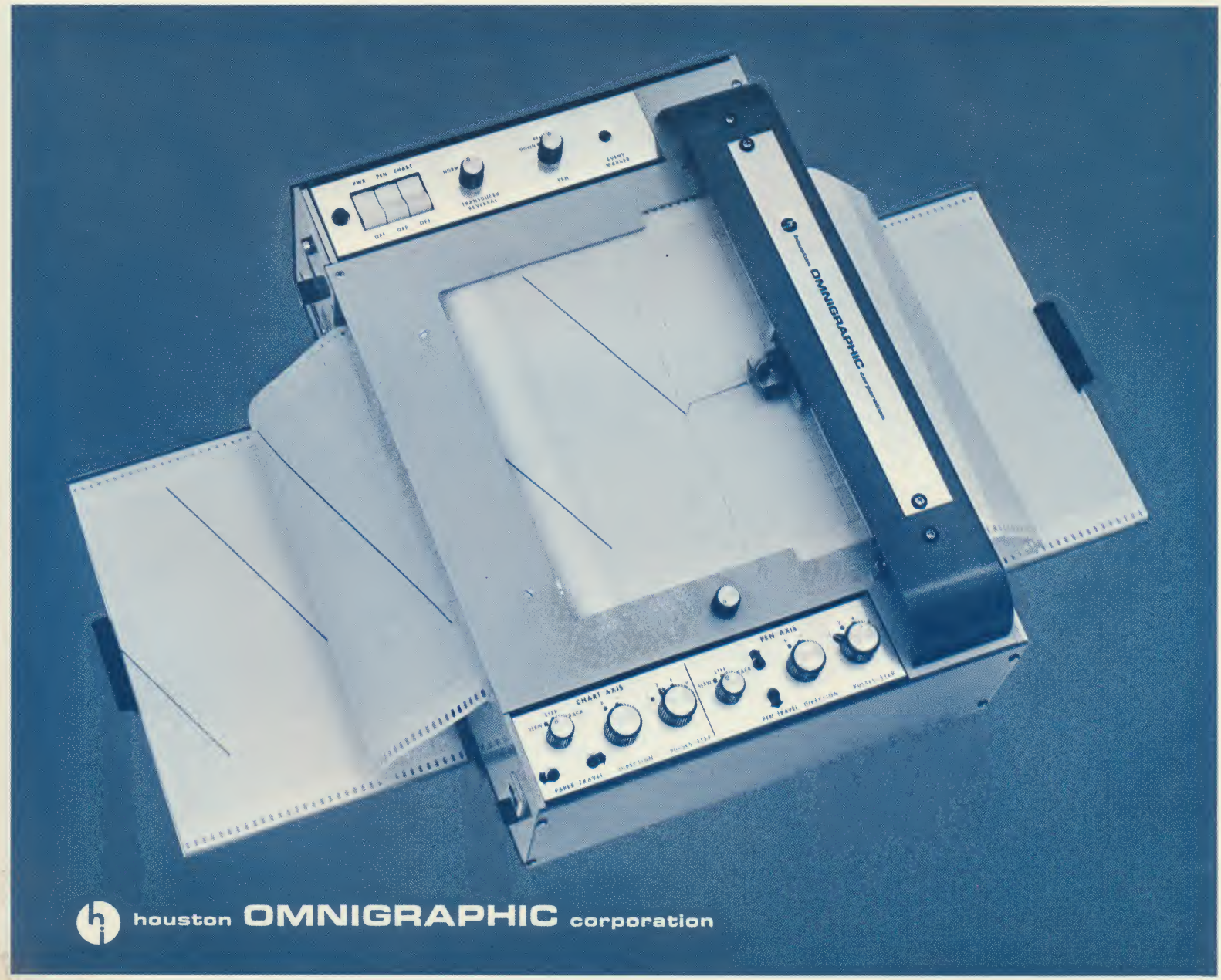
Bulletin No. 6710966

Litho U.S.A.

incremental
plotter series 6650

a flexible bi-directional incremental plotter capable of operating from computers / encoders or pulsers / commutators / or any sources supplying signals a minimum of 3 volts in amplitude

infinite scale expansion / Z fold paper / 0.005 or 0.01" resolution / programmable pen control / A.C. or D.C. operation / 18,000 increments per min. speed



description

The 6650 Series OMNIGRAPHIC$_{TM}$ Recorder is a bi-directional incremental plotter capable of operating from a variety of types of driving signals. Both the pen and paper move independently in discrete or incremental steps following an input which supplies change of state information. These inputs may include digital computers, incremental encoders, pulsers, four wire commutated encoders, pulse generators, stepper motor drive circuits or even change of state contact closures. The pen will draw a continuous trace or plot points.

The plotter utilizes bi-directional stepping motors on both the paper and the pen axis to produce the incremental steps. Each step of the motor causes either the pen or the paper to move 0.01 of an inch (0.005″ optional) in either direction.

All 6600 Series OMNIGRAPHIC$_{TM}$ Recorders use fan-fold paper which can be separated at perforated lines to yield 8½″ x 11″ or 11″ x 17″ notebook size records. Because the paper is of a fan-fold variety, all portions of the record may be read as one would read a book.

The 6650 and 6655 are incremental recorders capable of accepting four types of inputs. The 6655 has the additional ability of infinite scale expansion. This is fully explained in the section on infinite scale expansion.

typical applications

plotting of data from digital computers

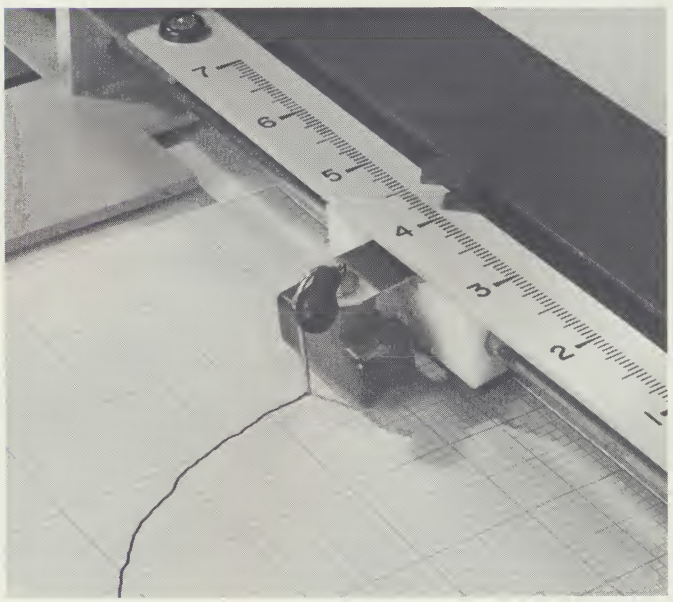
recording of data with inherently large dynamic range

continuous plots of shaft positions

pulse or cycle counting at repetition rates up to 300 increments per second

plotting of any data available in incremental form

offshore positioning system readout



The beauty of the model 6650 OMNIGRAPHIC$_{TM}$ Recorder inking system is in its simplicity of maintenance with all ink supplied in the form of sealed ink cartridges. To replace, just pull the spent cartridge from its holder, press a new cartridge in place, prime by squeezing the bulb—and it's done! Ease, speed and simplicity; key features in the OMNIGRAPHIC inking system, and representative of mature design and consideration of all details that make automatic data recording enjoyable with the 6650.

specifications

inputs

1. Two wire forward and reverse control for both axes.
   a. AC Coupled — Positive going pulse with an amplitude greater than 3 volts and a rise time of less than 10 μsec. A capacitor input of 0.01 μfd is coupled into a 10KΩ load.
   b. DC Coupled — A positive voltage with a minimum amplitude of 3 volts will initiate a single step. Any waveshape may be used (sine, square, triangle, ramp, etc.) provided the input does not exceed ± 50V. The input impedance is 10KΩ.

2. Operates directly from photo-electric bi-directional angular transducers which provide two square wave outputs phase shifted 90°; such as Roto-Switch manufactured by Disc Instruments, or Series 44 Encoders manufactured by Wang Laboratory. Features of this input are:

   Scale Factor — Selection on both axes of 1, 2, 4 and 8 pulses per increment.

   Transducer Reversal Switch — Allows either transducer to drive either axis.

3. Commutated four-wire control with proper switching action for direction.

4. Direct drive from a power source to drive four-wire bi-filar stepping motor.

general

Chart Paper — Folded chart paper is stored in a tray under the recorder and pays into a tray on the opposite side. The folded packet (perforated edges removed) is 8½" x 11". Serial locating numbers are printed every 17 inches. Each folded packet has a continuous 10 inch grid extending 144' in length with perforations every 8½ inches at the folds.

Recording Mechanism — Bi-directional stepper motors cause movement of pen and paper. Each axis is completely independent of the other.

Writing Mechanism — Liquid ink pen with cartridge ink supply. Pen-up or pen-down is controlled by a pulse having a minimum amplitude of 3 volts (with a minimum dwell of 10 μsec) into a 10KΩ load. Pulse rise time must be greater than 3 volts per 10 μsec. The pen may be operated from external contact closure. Manual front panel control is also provided.

Positioning — May be slewed, or single stepped into position with front panel control.

Optional Event Marker — ¼" offset of recording pen.

Outputs — Recorder supplies +12 volts for direct actuation of photo-electric cells, pulsers or incremental transducers. Maximum current drain can be no higher than 200 ma.

Ambient Temperature Range — 0°C to 40°C

Humidity — 0 to 95% at 30°C dry bulb.

Power Requirement — 115 or 230 VAC, ± 10%, 50/60 Hz, 125VA; or 24 ± 4 VDC, 100 W.

chart drive

The chart drive is unique in that the paper is maintained in place and held under a slight tension automatically when the cover is closed. This is accomplished by a spring torsion action between the left and right drive sprockets rather than by energy consuming slip clutches. The chart may thus be driven from left to right or right to left by the stepper motor drive, as the paper unfolds and folds from right to left or vice versa.

The chart drive motor is a 200 pole stepper motor geared so that each increment command causes 0.010 inches of chart motion. By changing the gears, 0.005 inches of increment or even less can be provided.

pen drive

The pen drive is unique in that it is attached to the recorder lid which is hinged. The lid allows loading or unloading of chart paper at any point on the graph. The pen drive mechanism is actually incorporated in the body of the recorder to protect it from damage. A cabling system uses the fulcrum of the recorder lid as a pulley point, such that the pen mechanism works at all times whether the lid is down for recording or up for paper loading. Therefore, no adjustments are ever required and the mechanism is protected in the recorder body.

The pen drive motor is a 200 pole stepper motor which is geared to give the same basic paper movement as the chart drive. All circuits of the two recorder axes are identical in all respects. Each axis has plug-in circuit boards which are interchangeable from one axis to the other.

charts and chart loading

In designing the new line of OMNIGRAPHIC$_{TM}$ recorders, it was decided to break with tradition and abandon the roll chart or individual flat sheet X-Y concept in favor of folded charts. The OMNIGRAPHIC$_{TM}$ folded charts are further improved in that they offer the best advantages of fan-fold "book" readability, have unlimited length and can be filed in a standard 8½" x 11" file folder.

Folded packets of chart paper are used, which store on a tray in the recorder base and pay into a second tray on the opposite side. The charts are both folded and perforated every 8½". The sprocket hole strips are perforated for removal and when removed, the remaining paper width is 11 inches. By tearing off the sprocket strips and tearing at the perforated fold points a standard size of paper is achieved. Either "A" size (8½" x 11") or "B" size (11" x 17") serially numbered sheets are derived. These are immediately ready for storage, reproduction, or reprint use.

The packets may be installed or removed by simply raising the recorder lid. A partially completed packet may be removed and the used and unused sections simply folded together and stored if it is necessary to temporarily interrupt a series of tests. The section of chart just recorded and all earlier and later sections are accessible for annotation.

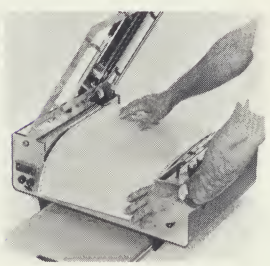
Summary:

The folded chart packets may be loaded or removed at the beginning of the chart or anywhere along the chart in a few seconds. *The major inconveniences of storing, loading and removing roll charts or individual sheets are eliminated.*

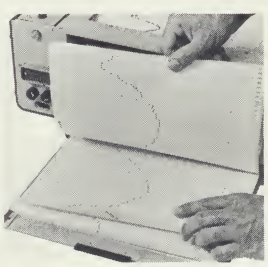
With a folded chart any portion of the record may be quickly viewed. The recorded portion is readily accessible and may be opened and visually scanned like the pages of a book. "After-thought" notations may be made on any portion of the record with the recorder running or switched off. *The problem of lack of accessibility of the previously recorded portion of a roll chart record is eliminated.*

In X-Y recording the time consuming process of loading and unloading each chart is eliminated. The advantages of standard sheet size is preserved. Sequences of individual records are preserved by the numbered sheets. *The time consuming process of individual hand loading of each record is eliminated, yet the advantages of standard record sheet size is preserved.*

Records of any length may be made and stored in standard size file folders or notebooks. Cementing or taping the packets end-to-end makes a record of unlimited length possible. *Single records or roll charts are limited in length by recorder design.*



ease of loading

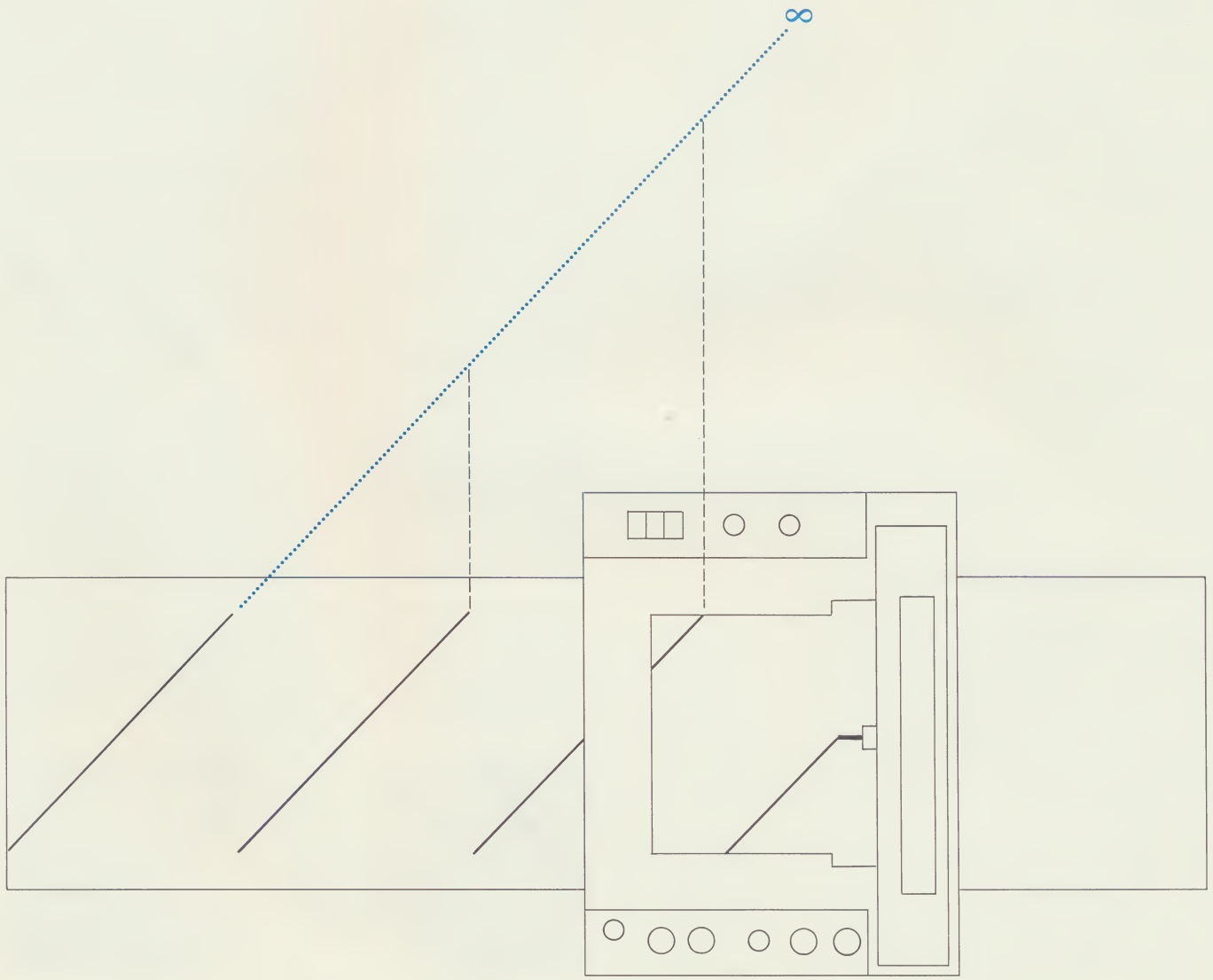


Z-fold paper

infinite scale expansion *Patent Pending*

Normal X-Y Recorders use a flat sheet of paper which causes both X and Y co-ordinates to be limited in the amount of range which can be illustrated for a given resolution. Conversely, choosing a full range, limits the amount of readable resolution (1 part in 1000). Roll chart mechanisms offer some improvement in that the paper axis can be greatly expanded (to the length of the roll). But even roll charts have a definite length, for a roll can not usually be expanded. Fan-fold paper is used in the 6650 series recorders and offers unlimited chart length, for the paper movement mechanism knows no limit and the paper may be stacked and attached end-to-end for unlimited paper movement.

Model 6655 OMNIGRAPHIC$_{TM}$ plotters provide a solution to the expansion of the pen (Y) axis. A signal increment is chosen equivalent to the maximum reading resolution desired. This choice is independent of the expected range. As the top or bottom grid boundary is reached, an automatic mechanism resets the pen by exactly one scale width less any increments received during the reset interval. This reset process can occur again and again. The net result is a plotter having both infinite X and Y resolution.



ordering information

1. Each recorder includes an accessory kit containing: Pen, 12 mixed colors Ink Cartridges, Instruction Manual, Power Cord, Mating Signal Connector, and one package of FC-40 Chart Paper.

2. For 230 VAC, 50/60 Hz operation, prefix model number with "E".

Model	Description	Price Each
6650	OMNIGRAPHIC$_{TM}$ Incremental Plotter. Providing fan-fold paper presentation; capable of four types of incremental input signals. 18,000 increment/min. pen and paper speed with 0.010 inches per increment. Programmable Pen control. Capable of operation with AC or DC power source.	$2850.00
6655	OMNIGRAPHIC$_{TM}$ Incremental Plotter. As above but includes infinite pen axis expansion.	$3525.00

NOTE: *When quantities of 5 instruments or more are ordered at one time with only a single type input needed, a price reduction may be achieved by specifying the deletion of the unneeded inputs.*

optional features

Suffix to Model #	Description	Additional
-001	Retransmitting potentiometer on paper axis.	$ 50.00
-003	Substitution of character printer for ink pen.	$ 130.00
-004	Limit switch pen axis-fully adjustable full scale.	$ 35.00
-005	Two limit switches pen axis—both adjustable full scale.	$ 100.00
-006	Chart Index — switch closure advances paper ½ inch beyond next paper fold or perforated tear point. It insures that each and every record is started on a separate chart.	$ 115.00
-007	Retransmitting potentiometer for paper axis.	$ 50.00
-008	Event Marker within the pen mechanism. Each actuation yields a ¼" ink trace from plotted line along the paper axis. Return yields no deviation from correct position.	$ 155.00
-023	Change to .005 inches per increment.	$ 100.00

supplies

Catalog #	Description	Price Each
FC-00	Chart Paper — Fan-fold blank recording surface, 10 inch (pen) by 144 feet (chart), folded every 8½ inches with serial No.'s every 17 inches. Perforated sprocket edges tear off to yield standard 8½" x 11", or 11" x 17" notebook paper sizes.	$ 5.00
FC-40	Chart Paper — Fan-fold, 10 inch grid divided into 10 major and 100 minor divisions. Paper axis grid divided into 10 minor divisions and 1 major division per inch. 144 feet long having tear apart feature and serial numbering.	$ 6.00
8300	Ink Cartridges — Box includes 12 cartridges. Specify color: green, red, black, blue, or mixed.	$ 10.00
8400	Pen — Used on all recorders, not incorporating the "-008" event marker.	$ 17.50
8450	Pen — Used on "-008" suffix instruments only.	$ 35.00

Prices: fob Houston, Texas

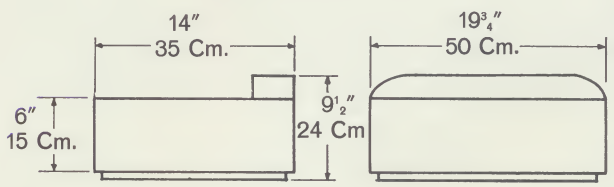
Terms: Net 30 Days

The right is reserved to make changes in construction, design, specifications and price without notice.

warranty:

Houston OMNIGRAPHIC Corporation warrants unconditionally for one year from date of shipment each instrument manufactured by it to be free from defects in material and workmanship. Its liability under this warranty is liimted to servicing or adjusting any instrument returned by the original purchaser to the factory for that purpose and to replace any defective parts therein.

PHYSICAL DIMENSIONS



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